



**Guidance for the production of a
Synthetic Flight Trainer Manual (SFTM)**

Use of Synthetic Flight Trainers (SFT)

SFT's approved for the purpose of accumulating aeronautical experience under provisions contained in Part 61 are classified as flight procedure trainers and may be approved for the purposes of:

- Accumulating instrument ground time
- Maintaining instrument rating currency
- Maintaining instrument approach currency
- Completion of an instrument rating annual competency demonstration; or
- Completion of the demonstration required for an additional make and model of GNSS navigation aid.

Authorisations that May be Issued to a Synthetic Flight Trainer

- (a) Two hours instrument ground time towards the issue of a Private Pilot Licence;
- (b) Five hours instrument ground time towards the issue of a Commercial Pilot Licence;
- (c) Five hours instrument ground time towards the issue of a Category C or B Flight Instructor Rating;
- (d) Up to twenty hours instrument ground time towards the issue of an Instrument Rating;
- (e) Two hours of instrument ground time towards the currency requirements of an Instrument Rating;
- (f) One NDB, VOR, RNAV (GNSS), LLZ or ILS approach procedure toward the currency requirements of an Instrument Rating;
- (g) One NDB, VOR, RNAV (GNSS), LLZ or ILS approach procedure toward approach currency requirements of an Instrument Rating in any one 3 month period;
- (h) Conduct of the cross-country portion and any one approach of every alternate Instrument Rating Annual Competency Flight Test;
- (i) Demonstration of (specific model) GNSS as a subsequent type and model.

General Conditions of Operation

For any training in an SFT to be applicable for the purpose of crediting experience toward the issue of a flight crew licence or rating or for any other authorised purpose, the synthetic trainer must be operated in accordance with the following conditions:

- An appropriate instructor (see conditions specific to the SFT authorisation) is present at the instructor station for the duration of the flight and signs the pilot's logbook entry.

- The synthetic trainer has been approved in the appropriate category and has the appropriate authorisation(s).
- Training is conducted in accordance with the Synthetic Flight Training Manual (SFTM).

Conditions that May be Specified on the Certificate

1. Each instructor shall be specifically approved by XXXXX for the purpose of instructing on the XXX in accordance with the company's SFTM;
2. Each instructor shall hold a current flight instructor rating in respect of authorisations (a), (b) and (c) and a current instructor rating and current instrument rating in respect of authorisations (d), (e), (f) and (g), and current flight examiner rating privileges in respect of authorisations (h) and (i);
3. The device shall be maintained to a level where it can meet the specific performance tasks required of it and in accordance with the company's SFTM;
4. Instruction details and times shall be entered in the candidate's logbook as instrument ground time, and each entry signed by the approved instructor who gave the instruction;
5. The certificate of approval shall be displayed in the vicinity of the trainer for public viewing.

Synthetic Flight Trainer Manual Requirements (SFTM)

To utilise the authorisations available, the approved synthetic trainer must be operated in accordance with its SFTM. A copy of the SFTM must be provided in the trainer.

CAA will only issue a synthetic trainer certificate (STC) if it is satisfied with the content of the SFTM.

A SFTM must include:

- A copy of the STC.
- A list of authorised instructors.
- Instructor qualifications (which must not be less than those specified on the STC) required by the operator to gain authorisation for each simulator approval. (Example at Appendix I)
- The training required by the operator to gain authorisation for simulator approval. (Example at Appendix II)
- A minimum equipment list. (Refer CAR 91.509 & 91.517 for guidance)

- A flight recording system and a maintenance program that provides for the reporting and clearing of defects, including the date, time and author of each entry.
- A system to reasonably ensure that the trainer maintains the required standard. This can be either a system of recorded periodic calibration or a system of continuous monitoring and appropriate certification. (Example at Appendix III).
- A section containing adequate operating procedures and instructions for pilots and instructors, which must include:
 1. Operating procedures and checks for normal operations (Example at Appendix IV)
 2. Clearly marked instructions or procedures for any **real** emergencies. (Example at Appendix V)
- A training syllabus appropriate to the trainer's approvals. (Examples at Appendix VI and VII)

Flight Examiners

To conduct instrument rating competency demonstrations in a synthetic flight trainer, a person must hold the appropriate flight examiner authorisation and comply with the requirements of the 141 or 119 organisation under which they exercise the privileges of the examiner rating. In addition, they need to be an approved operator for the simulator or have an approved operator available.

Applications for Approval

A request for approval or renewal of the approval, of a synthetic flight trainer, should be made in writing to CAA and be accompanied by a copy of the SFTM.

Inspection for Accreditation

A synthetic flight trainer that is to be used for the purpose of accumulating experience for the issue of any flight crew qualification or for any other authorised purpose must be inspected by CAA, initially and biennially thereafter.

The accreditation inspection will require:

- A fully serviceable synthetic trainer
- A synthetic trainer instructor (qualified on type).

Appendix I

SFT Instructor Requirements

General

To act as a synthetic flight training instructor a person must meet the requirements of the STC and the operator.

No instructor shall provide instruction using the _____

Unless the instructor:

1. Has been trained in the day to day operation of the flight trainer, including start up, shut down and emergency procedures; and
2. The appropriate additional operating requirements applicable to the authorisations sought; and
3. Meets the minimum qualification and currency requirements under Part 61 to instruct for the licence or rating being applied for or holds a General Aviation Instructor Certificate (Note: the operator may require higher qualifications and currency); and
4. The instructor has, within the immediately preceding _____ months demonstrated to:

_____ the ability to:

- a. operate the flight trainer in all normal and emergency manoeuvres;
 - b. use the flight trainer to instruct in appropriate aspects of instrument flight;
 - c. adjust flight conditions and simulate in-flight situations as required; and
5. Has received training in the requirements to log and certify all flights; and
 6. A logbook entry has been certified by _____ (authorised person) _____

Example logbook entry

(Operators Name)
_____ is authorised to operate the _____ (Make and Model) synthetic flight trainer in accordance with approvals (a), (b), (c), (d), (e), (f), (g), (h) and (i) (delete as applicable) until _____ (date) _____ or removed from the SFTM approved persons list.

Appendix II

SFT Instructor Training Requirements

General principles of simulator operation

Start up procedures

Communications setup and simulation

Navigation aid setup

Cloud base and visibility setup

Wind direction and speed setup

Failures and their programming

Use of plotters, printers and flight recording

Shut down procedures

Student records

Logbook certification

Fault recording

Emergency procedures

Appendix III

Maintenance Requirements

Maintenance Provider:

Any programming, repairs or adjustments that require removal of covers of either the _____ or any associated equipment **or** that involve modification of any software associated with the flight trainer **must** be carried out by persons trained and approved by the (manufacturer).

Persons providing maintenance or programming on the _____ must:

1. Have been instructed in the day-to-day operation of the training device, including start up and shut down and calibration check;
2. Have demonstrated to _____ the ability to operate the simulator in all normal situations;
3. Hold a current limited electrical registration or equivalent;
4. Have been approved by _____ to carry out required maintenance.

Maintenance Records:

All maintenance carried out must be documented in the training device logbook.

A sticker detailing next maintenance due date must be affixed to the flight trainer.

FLIGHT TRAINER	
Next Maintenance Due: ___/___/___	S/N _____
Location:	_____
Technician:	_____
Signed:	_____

Scheduled Maintenance:

This should cover the manufacturer's maintenance requirements.

Unscheduled maintenance:

Unservicabilities are recorded on the trainer's daily flight record and referred to _____

Appendix IV

Normal Operating Procedures

Start up (check list)

(Detail)

Cloud base and visibility setup

(Detail)

Wind direction and speed setup

(Detail)

Flight recording

(Detail)

Shut down (check list)

(Detail)

Appendix V

Emergencies

FIRE

Actions by the instructor

(Detail)

Actions by the student

(Detail)

ELECTRICAL (malfunction/short circuit)

Actions by the instructor

(Detail)

Actions by the student

(Detail)

Appendix VI

Training Syllabus for Simulated Instrument Flight

Training Syllabuses

The description of the sequences required in each syllabus must be sufficiently detailed so that they could be flown without further explanation. For example, for an instrument approach currency credit, the syllabus will need to include tracking to an initial approach fix and the complete approach procedure to the missed approach point or decision altitude.

Syllabuses must clearly indicate the sequences where simulated air traffic procedures are required.

Introduction (all students)

30 minutes

- Cockpit familiarisation to include all switches and controls
- Check list familiarisation
- General flying to familiarise the student with the handling characteristics of the trainer
- Real emergencies

PPL

2 hours maximum

- Scanning techniques during manoeuvring
- Pattern flying (examples A and B at Appendix VII)
- Recovery from unusual attitudes

CPL

5 hours maximum

- Revision of PPL
- Pattern flying (to include example C at Appendix VII)

Instructor rating

5 hours maximum

- Revision of PPL and CPL
- Pattern flying (to include examples A, B and C at Appendix VII)
- Emphasis on scanning and cross referencing instruments
- Emphasis on methods of reducing workload

Instrument rating

20 hours maximum

- Basic instrument flight
 - Scanning
 - Workload reduction
 - Standard rates of climb and descent
 - Rate 1 turns
 - Timed turns
 - Procedure turns
 - Climbing and descending turns
- ADF
 - Theory of operation
 - Limitations and errors

Failure indications
Tuning, identifying and testing
Tracking tolerances
Orientation and station passage
Tracking outbound and interception of track
Tracking inbound and interception of track
Allowances for drift
Cross-country flight on an NDB track
Holding patterns
 Sector entries
 The abeam position
NDB Approach
 Chart interpretation
 Altitude limitations
 Straight in and circling approach
 Missed approach procedure
Twin NDB approach

- VOR
 Theory of operation
 Limitations and errors
 Failure indications
 Tuning, identifying and testing
 Tracking tolerances
 Course selection and orientation using the CDI
 Command and non-command indications of the CDI and HSI
 Station passage
 Tracking outbound and interception of track
 Tracking inbound and interception of track
 Allowances for drift
 Cross-country flight on a VOR track
 Holding patterns
 Sector entries
 The abeam position
 VOR Approach
 Chart interpretation
 Altitude limitations
 Straight in and circling approach
 Missed approach procedure

- ILS
 Theory of operation
 Limitations and errors
 Failure indications and false courses
 Tuning, identifying and testing
 Tracking tolerances
 Course selection and orientation

Interception and tracking
Allowances for drift
Holding patterns
Sector entries
ILS Approach
Chart interpretation
Altitude limitations (straight in and circling)
Calculation of approximate rate of descent
Outer and middle markers
Missed approach procedure
LLZ Approach
Chart interpretation
Altitude limitations (straight in and circling)
Calculation of approximate rate of descent
Missed approach procedure

- DME
Theory of operation
Limitations and errors
Tuning, identifying and testing
Arc tracking tolerances
Use in conjunction with other aids
- GNSS (holds a current GNSS rating)
Menu differences
Holding
Approach
Missed approach

Instrument rating currency

2 hours maximum (3 monthly)

- Standard rates of climb and descent
Rate 1 turns
Timed turns
Procedure turns
Climbing and descending turns
- Approaches which may include

Instrument rating approach currency

1 maximum (3 monthly)

- NDB
- VOR
- RNAV (GNSS)
- LLZ
- ILS

EXAMPLE Instrument rating currency exercise

1. Take-off runway _____
2. Climb at 100 kts to 3000 feet
3. Track to _____ NDB
4. Enter the _____ NDB hold
5. Intercept the _____ NDB outbound track or
6. Fly heading _____
7. Intercept the _____ VOR track
8. Carry out the VOR/DME arc approach
9. Standard missed approach

EXAMPLE Instrument rating annual competency cross-country portion (including one approach) exercise (Biennial maximum)

1. Take-off runway _____
2. SID _____
3. Track A to B [VOR, NDB, RNAV (GNSS) or combination thereof]
4. STAR _____
5. Approach (non precision or precision)

APPENDIX VII

Pre Planned Exercise Patterns